of 7th. The rainfall rapidly increased on the Atlantic Coast, 3.20 inches being measured in twelve hours at Kittyhawk a. m. of 6th.

IV.—First noted, p. m. of 4th, to the north of Montana. The motion was eastward to the north of stations of observation.

V.—First noted at the same point as the last, p. m. of 8th. Moving in an easterly direction, it finally disappeared in the St. Lawrence Valley a. m. of 11th.

VI.—Like the two last, this storm was first noted to the north of Montana. Its motion was east and southeast, and it was quickly dissipated to the north of Lake Superior a. m. of 13th.

VII.—This storm began in the middle Plateau Region on the same day that VI was developing north of Montana. Its motion was southeast at first, and it turned to northeast p. m. of 12th in Arkansas. It was last seen off Newfoundland a. m. of 15th.

VIII.—This storm appeared on the north Pacific Coast p. m. of 12th. Its motion was a very little south of east and it disappeared off the New England coast a. m. of 16th.

IX.—First noted to the north of Montana a. m. of 16th. Its path was to the north of stations of observation and it disappeared in the Gulf of St. Lawrence a. m. of 21st.

X.—Like the last this storm originated to the north of Montana p. m. of 19th. Its motion was eastward and it was last seen over Newfoundland a. m. of 25th.

XI.—First noted in the same region as the two last, p. m. of 23d. Its motion was east and southeast, and it was last seen n Virginia p. m. of 26th.

XII.—As in the three last cases this storm was first seen to the north of Montana. Its motion was east and it was last seen p. m. of 28th in the valley of the St. Lawrence river.

XIII.—Began on the north Pacific Coast a. m. of 27th. Its motion was southeast and it was last seen in Mississippi p. m. of 29th.

XIV.—While the last storm was in the middle Plateau Region a disturbance was noted in northern Louisiana a. m. of 28th. This could not properly be called a gulf storm, and there was no heavy rainfall connected with it. Its motion was northeast and it was last seen off the New Jersey coast p. m. of 29th. This storm will appear as I in the March WEATHER REVIEW.

HIGH AREAS.

This February may be regarded as one of the mildest experienced in this country in twenty-five years as regards very low temperature or great changes. The only cold wave of any severity was the one accompanying high No. VI, and in this there were few temperature falls of 30° in twenty-four hours.

I.—First noted off the middle Pacific Coast p. m. of 1st. Its motion was very slow and erratic at first and it hovered in the middle Plateau Region for seven days. Its motion was then to southeast and it was last seen in the east Gulf p. m. of 11th.

II.—Was first seen to the north of Lake Superior p. m. of 2d. Its path was to the north of the stations of observation and it disappeared near Newfoundland a. m. of 6th.

III.—Noted off the North Pacific coast p. m. of 9th. Its motion was east-southeast for two days, then it turned northeast and disappeared off Cape Cod a. m. of 13th.

IV.—This high appeared twenty-four hours after the last, and in the same place. Its motion was southeast and east, and it was last seen off South Carolina, p. m. of 14th.

V.—This was first noted to the north of Montana a. m. of 12th. In twenty-four hours the pressure had risen slightly to 30.66. The motion was southeast and east, and it disappeared to the north of Lake Superior a. m. of 14th.

VI.—This high, like the last, was seen first to the north of Montana p. m. of 14th. The pressure rose rather rapidly in the center and reached 30.74 (highest of the month) a. m. of 16th. The motion was southeast, east, and northeast, and it was last seen in the Gulf of St. Lawrence p. m. of 18th. A temperature fall of 41° in twenty-four hours was noted at Block Island a. m. of 17th.

VII.—This high also originated off the north Pacific Coast p. m. of 16th. Its motion was first east, reaching Manitoba a. m. of 19th, then southeast, reaching Florida p. m. of 23d.

From the 17th to the end of the month the pressure continued high in the Plateau region but there was no motion at all, and hence the condition has not been charted or recorded.

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long W.	Length.	Duration.	Daily.	Hourly.
Low areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I*	31, p. m.	47	91	3, a. m.	48	52	1,880	2.5	752	31.4
II	1, a. m.	27	96	6, a. m.	48	88	1,900	5.0	380	15.9
III	4, a. m.	38	96	7, p. m.	47	59	2,560	3.5	732	30.5
IV	4, p. m.	51	113	11, a. m.	48	54	4,260	6.5	656	27.3
V	8, p. m.	54	114	11, a. m.	47	76	1,760	2.5	704	29.3
VI	11, a. m.	55	116	13, a. m.	50	89	1,440	2.0	720	30.0
VII	11, a. m.	40	112	15, a. m.	47	52	3,520	4.0	880	36.7
VIII	12, p. m.	49	122	16, a. m.	42	68	2,840	3.5	813	33.9
IX	16, a. m.	53	118	21, a. m.	48	60	2,940	5.0	588	24.5
X	19, p. m.	52	119	25, a. m.	49	54	2,990	5.5	544	22.7
XI	23, p. m.	54	121	26, p. m.	38	78	2,490	3.0	830	34.6
XII	25, p. m.	55	114	28, p. m.	48	74	1,870	3.0	624	26.0
XIII	27, a. m.	47	127	29, p. m.	33	89	2,340	2.5	936	39.0
XIV	28, a. m.	32	92	29, p. m.	37	77	1,160	1.5	772	32.2
Sums							33,950	50.0	9,931	
Mean of 14 paths									709	29.6
Mean of 50.0 days									679	28.3
High areas.										
I	1, p. m.	41	125	11, p. m.	27	83	4,300	10.0	430	18.0
II	2, a. m.	50	85	6, a. m.	47	59	1,630	4.0	408	17.0
III	9, p. m.	47	126	13, a. m.	41	69	3,240	3.5	926	38.6
IV	10, p. m.	46	126	14, p. m.	33	80	3,180	4.0	795	33.1
V	12, a. m.	55	114	14, a. m.	50	88	1,360	2.0	681	28.4
VI	14, p. m.	54	105	18, p. m.	48	61	2,520	4.0	631	26.3
VII	16, p. m.	45	126	23, p. m.	38	84	4,030	7.0	576	24.0
Sums							30,260	34.5	4,447	
Mean of 7 paths									635	26.5
Mean of 34.5 days									587	24.5

*January 31.

LOCAL STORMS.

By A. J. HENRY, Chief of Division of Records and Meteorological Data.

It is designed to give in this connection a brief account of losses of life and property by violent local winds. The winds accompanying a general storm often attain considerable violence, and much damage may be done over a large section of ountry. Usually, a reference will be made to cases of destruction by the winds accompanying a general storm, but it should be understood that estimates of property loss in connection therewith are much more liable to error than in cases of purely local storms.

The winds of the general storm of the 5th to 7th are reported as having attained tornadic violence in the northern part of Thomas County, Georgia, on the 5th, although there is no evidence that a true tornado occurred. Fences and outbuildings were blown down and standing timber was damaged. A squall from the northeast, lasting but a minute or so, injured 2 persons and did considerable damage to roofs, chimneys, and lumber mills, in Mobile, Ala.; a few ships in the harbor were also damaged. The squall was confined to a narrow path and lasted only for a few moments; otherwise, considerable damage might have been done. The press despatches report that on the same date buildings were unroofed and a church was destroyed in the vicinity of Rocky Mount, N. C.

As the storm skirted the middle Atlantic Coast on the 6th, the rain and winds combined damaged and destroyed an immense amount of property throughout eastern Pennsylvania, New Jersey, and southern New England. The lowlands of New Jersey were inundated, and many towns and villages were flooded. Bridges were washed away, and 11 lives were lost by drowning—8 at Bristol, Conn., 2 at Pottstown, Pa., and 1 at Boundbrook, N. J. At the last named place, the water stood 6 feet deep in the principal streets of the village.

In a number of other towns and villages the inhabitants were forced to take refuge in the second stories of their dwellings. An accurate estimate of the property loss by wind and water can not be given.

TEMPERATURE OF THE AIR.

[In degrees Fahrenheit.]

The mean temperature is given for each station in Table II, for voluntary observers. Both the mean temperatures and the departures from the normal are given in Table I for the regular stations of the Weather Bureau.

The *monthly mean temperatures* published in Table I, for the regular stations of the Weather Bureau, are the simple means of all the daily maxima and minima; for voluntary stations a variety of methods of computation is necessarily allowed, as shown by the notes appended to Table II.

The *regular diurnal period* in temperature is shown by the hourly means given in Table V for 29 stations selected out of 82 that maintain continuous thermograph records.

The *distribution* of the monthly mean temperature of the air over the United States and Canada is shown by the dotted isotherms on Chart IV; the lines are drawn over the high irregular surface of the Rocky Mountain Plateau, although the temperatures have not been reduced to sea level, and the isotherms, therefore, relate to the average surface of the country occupied by our observers; such isotherms are controlled largely by the local topography, and should be drawn and studied in connection with a contour map.

The *highest mean temperatures* were: Key West, 68.0; Jupiter, 62.1; Yuma, 60.8; Corpus Christi, 58.8.

The *lowest mean temperatures* were: In Canada: Winnipeg, 3.8; White River, 4.5; Minnedosa, 6.1. In the United States: Moorhead, 13.7; Williston, 15.0; Bismarck, 16.3; Duluth, 16.4; Sault Ste. Marie, 16.6.

As compared with the normal for February the mean temperature for the current month was deficient throughout New England, the Middle, South Atlantic, and Gulf States, but was in excess throughout the Rocky Mountain Region, the Ohio and upper Mississippi valleys, the upper Lake Region, and the Pacific Slope:

The greatest excesses were: Idaho Falls, 15.9; Medicine Hat, 14.1; Swift Current, 13.4; Edmonton, 13.3; Qu'Appelle, 12.9; Pierre, 12.8; Calgary, 12.7; Miles City, 12.3; Helena, 12.2.

The greatest deficits were: Port Eads, 5.7; Jupiter, 4.1; Meridian, 4.0; Key West, 3.8; Pensacola, 3.4; Tampa and Montgomery, 3.0.

Considered by districts the mean temperatures for the current month show departures from the normal as given in Table I. The greatest positive departure was: Northern Plateau, 11.6. The greatest negative departures were: Florida Peninsula, 3.6; east Gulf, 3.2.

The years of highest and lowest mean temperatures for February are shown in Table I of the REVIEW for February, 1894. The mean temperature for the current month was the highest on record at Wichita, 40.2; Topeka, 37.4; Concordia, 37.4; Pueblo, 36.8; North Platte, 36.6; Huron, 24.8; Rapid City, 33.0; Fresno, 53.4; Carson City, 41.2; Spokane, 38.9; Astoria, 46.4. It was not the lowest on record at any regular station of the Weather Bureau.

The *maximum and minimum temperatures* of the current month are given in Table I. The highest maxima were: 91, Yuma (28th); 88, Los Angeles (16th); 85, San Luis Obispo (18th); 84, San Antonio (29th); 83, Jupiter (8th), Corpus Christi (27th), and San Diego (17th); 82, Phœnix (28th); 80, Fresno (20th) and Key West (5th). The lowest maxima were: 40, Sault Ste. Marie (27th); 41, Alpena (22d); 42, Northfield (28th); 44, Eastport (24th); 45, Portland, Me. (24th). The highest minima were: 52, Key West (18th); 44, San Francisco (frequently); 41, Point Reyes Light (23d); 39, Port Eads (18th), Galveston, Corpus Christi, and San Diego (8th); 38, Sacramento (3d); 37, Jupiter and New Orleans (18th); 36, Los Angeles (8th); 34, Yuma and Redbluff (8th) Eureka (12th); 33, Tampa (18th), San Antonio (8th); 32, Palestine and San Luis Obispo (9th). The lowest minima were: —30, Northfield (18th); —20, Duluth (19th), Williston (13th); —18, Sault Ste. Marie (17th).

The years of highest maximum and lowest minimum temperatures are given in the last four columns of Table I of the current REVIEW. During the present month the maximum temperatures were the highest on record at: Pueblo, 72; Wichita, 78; Columbus, Mo., 76; Kansas City, 76; Topeka, 78; Concordia, 79; North Platte, 74; Omaha, 78; Des Moines, 70; Sioux City, 75; Huron, 68; Greenbay, 59; St. Paul, 61; Moorhead, 59; Miles City, 68; Spokane, 59; Walla Walla, 69; Astoria, 62; Eureka, 69; Los Angeles, 88; Yuma, 91. The minimum temperatures were the lowest on record at: Oswego, —18; Boston, —11; Nantucket, —1; New Haven, —11; Narragansett Pier, —12; Woods Hole, —6; Vineyard Haven, —4; New York, —6.

The greatest daily range of temperature and the extreme monthly ranges are given for each of the regular Weather Bureau stations in Table I, which also gives data from which may be computed the extreme monthly ranges for each station. The largest values of the greatest daily ranges were: Bismarck, 66; Huron, 56; Pierre, 54; Sioux City, 51; Miles City, 52; Pueblo, 50. Among the extreme monthly ranges the largest values were: Duluth, 79; Moorhead, 78; Bismarck, Huron, Sioux City, and Minneapolis, 77; Omaha, 76; St. Paul, Keokuk, and Indianapolis, 75. The smallest values were: Tatoosh Island, 26; Pysht, 27; Neahbay, East Clallam, Port Crescent, Port Angeles, San Francisco, and Key West, 28; Port Eads, 30; Astoria, 31; Galveston, 32; Point Reyes Light and Portland, Oreg., 33; Sacramento, 34; Seattle, 35.

The *accumulated monthly departures* from normal temperatures from January 1 to the end of the current month are given in the second column of the following table, and the average departures are given in the third column for comparison with the departures of current conditions of vegetation from the normal conditions.

Districts.	Accumulated departures.		Districts.	Accumulated departures.	
	Total.	Average.		Total.	Average.
	°	°		°	°
West Gulf	+ 2.6	+ 1.3	New England	— 2.3	— 1.2
Ohio Valley and Tenn.	+ 0.7	+ 0.4	Middle Atlantic	— 2.8	— 1.4
Upper Lake	+ 6.6	+ 3.3	South Atlantic	— 4.3	— 2.2
North Dakota	+12.1	+ 6.0	Florida Peninsula	— 7.1	— 3.6
Upper Mississippi	+ 9.9	+ 5.0	East Gulf	— 4.8	— 2.4
Missouri Valley	+14.3	+ 7.2	Lower Lake	— 0.3	— 0.2
Northern Slope	+16.6	+ 8.3			
Middle Slope	+14.6	+ 7.3			
Abilene (southern Slope)	+ 7.0	+ 3.5			
Southern Plateau	+ 4.9	+ 2.4			
Middle Plateau	+12.1	+ 6.0			
Northern Plateau	+21.0	+10.5			
North Pacific	+ 7.0	+ 3.5			
Middle Pacific	+ 6.7	+ 3.4			
South Pacific	+ 7.8	+ 3.9			

The limit of freezing weather is shown on Chart VI by the isotherm of minimum 32, and the limit of frost by the isotherm of minimum 40.